

# PATENT ABSTRACTS OF JAPAN

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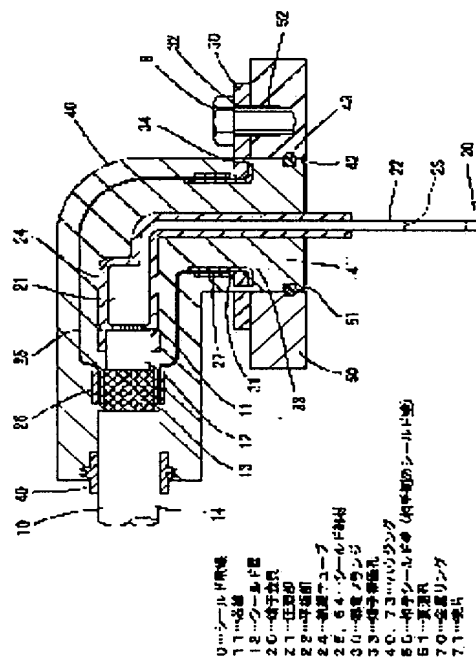
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## (54) SHIELDED CONNECTOR

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a miniaturizable shielded connector capable of arranging a shield electric wire parallelly to a counterpart shield wall.

SOLUTION: A terminal metal fitting 20 housed inside the shielded connector is formed into an L-shape by bending a flat plate 22 extending from a crimped part 21 at right angles, while the flat plate 22 can be bent in the thickness direction with a radius smaller than that of the shield electric wire 10 even if its cross sectional area is set equal to that of the a core wire 11 in the shield electric wire 10. In this way, the dimension of the bending part is reduced, and consequently, the dimension of the shielded connector can be reduced as a whole.



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CLAIMS

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[Claim(s)]

[Claim 1] It comes to hold the end face side of the terminal metallic ornaments stuck to the core wire of said shielding electric wire by pressure in the interior of housing which covered the terminal section of a shielding electric wire. It is attached in the breakthrough formed in the shielding wall of the other party. The shielding layer of said shielding electric wire in the shielding connector which makes flow connection at the shielding wall of said other party, and holds the head side of said terminal metallic ornaments in the condition of having made shielding Kabeuchi of said other party rushing in said terminal metallic ornaments. While bending the plate section which carried out continuation formation from the sticking-by-pressure section to said core wire and forming the whole in the shape of L character. From the end face side of the terminal metallic ornaments to a head approach location is covered by the insulating member. Inside said housing. The outside of said insulating member which covered said terminal metallic ornaments is established in a wrap shielding member. The end of the shielding member. It is the shielding connector characterized by allotting the other end to a contact part with the shielding wall of said other party among said housing while flow connection is made succeeding said shielding layer of said shielding electric wire.

[Claim 2] Said insulating member which covered said terminal metallic ornaments is a shielding connector according to claim 1 characterized by having consisted of insulating tubes of heat shrink nature, or having applied the insulating resin of a melting condition to said terminal metallic ornaments, and being formed.

[Claim 3] Said housing is a shielding connector according to claim 1 or 2 characterized by having been filled up with synthetic resin in the metal mold for resin shaping which inserted said shielding electric wire, and being fabricated.

[Claim 4] The shielding connector according to claim 3 characterized by having allotted the electric conduction flange which comes to carry out penetration formation of the terminal insertion hole to the conductive member in said metal mold with said shielding electric wire, having made said terminal insertion hole insert in said terminal metallic ornaments, having connected the head of said shielding member to said electric conduction flange further, and fabricating said housing with the synthetic resin with which it was filled up in said metal mold.

[Claim 5] It comes to hold the end face side of the terminal metallic ornaments stuck to the core wire of said shielding electric wire by pressure in the interior of housing which covered the terminal section of a shielding electric wire. It is attached in the breakthrough formed in the shielding wall of the other party. The shielding layer of said shielding electric wire in the shielding connector which makes flow connection at the shielding wall of said other party, and holds the head side of said terminal metallic ornaments in the condition of having made shielding Kabeuchi of said other party rushing in said terminal metallic ornaments. While carrying out rigid-angle bending of the plate section which carried out continuation formation towards the direction which intersects perpendicularly with said shielding electric wire from the sticking-by-pressure section to said core wire and forming the whole in the shape of L character. From the end face side of the terminal metallic ornaments to a head approach location is stuck with the insulating tube of heat shrink nature. In a wrap. The insulating resin of a melting condition is applied. Or a bonnet and said housing. The shielding connector characterized by being fabricated in the shape of [ corresponding to said terminal metallic ornaments ] L character with the conductive synthetic resin with which inserted said shielding electric wire in the metal mold for resin shaping where said shielding layer is exposed, and it was filled up there.

[Claim 6] The shielding connector according to claim 5 characterized by having installed two or more protruding pieces towards the side from the metal ring, having filled up the surroundings of said metal ring and said protruding piece with said conductive synthetic resin, and fabricating said housing while the metal

ring was stuck to the shielding layer exposed among said shielding electric wires by pressure.

[Claim 7] It comes to hold the terminal metallic ornaments stuck to the core wire of said shielding electric wire by pressure in the interior of housing which covered the terminal section of a shielding electric wire. In the shielding connector which is attached in the breakthrough formed in the shielding wall of the other party, and makes flow connection of the shielding layer of said shielding electric wire at the shielding wall of said other party said terminal metallic ornaments While bending Itabe who did continuation formation from the 1st sticking-by-pressure section to said core wire and forming the whole in the shape of L character, the terminal metallic ornaments are covered by the insulating member. Inside said housing The outside of said insulating member which covered said terminal metallic ornaments is established in a wrap shielding member. The end of the shielding member While flow connection is made succeeding said shielding layer of said shielding electric wire, the other end The shielding connector characterized by preparing the 2nd sticking-by-pressure section which was allotted to the contact part with the shielding wall of the other party among said housing, was located in the interior of said housing in said 1st sticking-by-pressure section in said terminal metallic ornaments, and the edge of an opposite hand, and stuck the junction electric wire by pressure.

[Claim 8] It is a shielding connector given in either among claim 1 characterized by preparing the shielding member for said insulating member in the holddown member which is fixable to an adhesion condition to an insulating member on the outside of the wrap aforementioned shielding member, claim 2, claim 3, claim 4, or claim 7.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention is prepared in the terminal section of a shielding electric wire, and relates to the shielding connector attached in the breakthrough formed in the shielding wall of the other party.

[0002]

[Description of the Prior Art] Conventionally, as an example of this kind of shielding connector, as shown in drawing 8 and drawing 9, what was carried by JP,11-26093,A is equipped with a rubber ring 2, a retaining ring 3, a conducting sleeve 4, and a ferrule 5 in the cylindrical straight \*\*\*\*\* housing 1, and makes further the structure which has arranged the flow contact segment 6 to the front end peripheral face of housing 1. And housing 1 is attached so that the terminal section of the shielding electric wire 10 may be covered, among [ flange ] housing 1, fitting is carried out to the breakthrough which formed the head side in the shielding wall of the other party, and a stop is \*\*\*\*ed and carried out to the shielding wall of the other party with the bolt which a part of flange does not illustrate.

[0003]

[Problem(s) to be Solved by the Invention] By the way, there is a case where he wants to manage a shielding electric wire in the direction which was concurrent with the shielding wall of the other party on the relation of a tooth space. However, such management structure cannot be taken in the above-mentioned conventional shielding connector. On the other hand, for example, the above-mentioned tubed housing 1 is made only crooked in the shape of L character, and if it is the configuration which incurvated the shielding electric wire in the interior, the whole shielding connector will become large on the relation of the allowance crookedness radius of a shielding electric wire.

[0004] Moreover, since its components mark will increase dramatically as shown in drawing 9 if the conventional shielding connector has at least six basic component parts (components which attached the above-mentioned signs 1-6) and the other fine components are set, a shielding connector will enlarge it only by transforming the conventional structure.

[0005] This invention aims at offer of the shielding connector which was made in view of the above-mentioned situation, and can manage a shielding electric wire in the direction which was concurrent with the shielding wall of the other party, and can be miniaturized.

[0006]

[Means for Solving the Problem] In order to attain the above-mentioned object, the shielding connector concerning invention of claim 1 It comes to hold the end face side of the terminal metallic ornaments stuck to the core wire of said shielding electric wire by pressure in the interior of housing which covered the terminal section of a shielding electric wire. It is attached in the breakthrough formed in the shielding wall of the other party. The shielding layer of said shielding electric wire In the shielding connector which makes flow connection at the shielding wall of said other party, and holds the head side of said terminal metallic ornaments in the condition of having made shielding Kabeuchi of said other party rushing in said terminal metallic ornaments While bending the plate section which carried out continuation formation from the sticking-by-pressure section to said core wire and forming the whole in the shape of L character From the end face side of the terminal metallic ornaments to a head approach location is covered by the insulating member. Inside said housing The outside of said insulating member which covered said terminal metallic ornaments is established in a wrap shielding member. The end of the shielding member While flow connection is made succeeding said shielding layer of said shielding electric wire, the other end has the description at the place allotted to the contact part with the shielding wall of said other party among said

housing.

[0007] The insulating member to which invention of claim 2 covered terminal metallic ornaments in the shielding connector according to claim 1 has the description at the place which consisted of insulating tubes of heat shrink nature, or applied the insulating resin of a melting condition to terminal metallic ornaments, and was formed.

[0008] Invention of claim 3 has the description in a shielding connector according to claim 1 or 2 at the place which housing was filled up with synthetic resin in the metal mold for resin shaping which inserted the shielding electric wire, and was fabricated.

[0009] In a shielding connector according to claim 3, it allots the electric conduction flange which comes to carry out penetration formation of the terminal insertion hole to a conductive member in metal mold with a shielding electric wire, and invention of claim 4 makes a terminal insertion hole insert in terminal metallic ornaments, and further, the head of a shielding member is connected to an electric conduction flange, and it has the description at the place which fabricated housing with the synthetic resin with which it was filled up in metal mold.

[0010] The shielding connector concerning invention of claim 5 inside housing which covered the terminal section of a shielding electric wire It is attached in the breakthrough which came to hold the end face side of the terminal metallic ornaments stuck to the core wire of a shielding electric wire by pressure, and was formed in the shielding wall of the other party. In the shielding connector which makes flow connection of the shielding layer of a shielding electric wire at the shielding wall of the other party, and holds the head side of terminal metallic ornaments in the condition of having made shielding Kabeuchi of the other party rushing in While terminal metallic ornaments carry out rigid-angle bending of the plate section which carried out continuation formation towards the direction which intersects perpendicularly with a shielding electric wire from the sticking-by-pressure section to a core wire and the whole is formed in the shape of L character From the end face side of the terminal metallic ornaments to a head approach location is stuck with the insulating tube of heat shrink nature. In a wrap Or the insulating resin of a melting condition is applied, a bonnet and housing insert a shielding electric wire in the metal mold for resin shaping, where a shielding layer is exposed, and it has the description at the place fabricated with the conductive synthetic resin with which it was filled up there in the shape of [ corresponding to terminal metallic ornaments ] L character.

[0011] In a shielding connector according to claim 5, two or more protruding pieces are installed towards the side from the metal ring, and invention of claim 6 has the description at the place where the surroundings of a metal ring and a protruding piece were filled up with conductive synthetic resin at, and housing was fabricated, while a metal ring is stuck to the shielding layer exposed among shielding electric wires by pressure.

[0012] The shielding connector concerning invention of claim 7 inside housing which covered the terminal section of a shielding electric wire In the shielding connector which is attached in the breakthrough which came to hold the terminal metallic ornaments stuck to the core wire of said shielding electric wire by pressure, and was formed in the shielding wall of the other party, and makes flow connection of the shielding layer of said shielding electric wire at the shielding wall of said other party While said terminal metallic ornaments bend Itabe who did continuation formation from the 1st sticking-by-pressure section to said core wire and the whole is formed in the shape of L character, the terminal metallic ornaments are covered by the insulating member. Inside said housing The outside of said insulating member which covered said terminal metallic ornaments is established in a wrap shielding member. The end of the shielding member While flow connection is made succeeding said shielding layer of said shielding electric wire, the other end It is allotted to a contact part with the shielding wall of the other party among said housing, and has the description at the place where the 2nd sticking-by-pressure section which was located in the interior of said housing and stuck the junction electric wire by pressure is prepared in said 1st sticking-by-pressure section in said terminal metallic ornaments, and the edge of an opposite hand.

[0013] Invention of claim 8 has the description in a shielding connector given in either at the place where the shielding member is prepared for said insulating member in the holddown member which is fixable to an adhesion condition to the insulating member on the outside of the wrap aforementioned shielding member among claim 1, claim 2, claim 3, claim 4, or claim 7.

[0014]

[Function and Effect of the Invention] If housing of the shielding connector concerning invention of <invention of claim 1> claim 1 is attached in the shielding wall of the other party, at the end side of housing, the terminal metallic ornaments stuck to the core wire of a shielding electric wire by pressure rush into

shielding Kabeuchi, and a shielding electric wire will be extended in parallel to the shielding wall of the other party in the other end side of housing. Here, in the thickness direction, although terminal metallic ornaments carry out rigid-angle bending of the plate section prolonged from the sticking-by-pressure section and it is formed in the shape of L character, even if it makes the plate section into the same cross section as the core wire of a shielding electric wire, since you can make it crooked in a small crookedness radius compared with a shielding electric wire, the miniaturization for a flection is attained, as a result the miniaturization of the whole shielding connector is attained.

[0015] With the configuration of <invention of claim 2> claim 2, since terminal metallic ornaments heat the insulating tube of heat shrink nature, and are covered with an adhesion condition, or the insulating resin of a melting condition is applied and it is covered with the layer of the insulating resin, in few tooth spaces, terminal metallic ornaments and a shielding member can be insulated and the miniaturization of a shielding connector is attained. In addition, in order to apply the insulating resin of a melting condition to terminal metallic ornaments, the so-called dipping processing which soaks terminal metallic ornaments at insulating resin is mentioned to a melting condition.

[0016] With the configuration of <invention of claim 3> claim 3, since housing was used as the insertion mold goods concerning a shielding electric wire, the drastic cutback of components mark can be aimed at compared with the thing of attachment structure. Moreover, if terminal metallic ornaments are covered in the layer of the insulating tube of heat shrink nature described above before insert molding, or insulating resin, a shielding member can prevent the situation of contacting terminal metallic ornaments, with the resin pressure at the time of housing shaping.

[0017] With the configuration of <invention of claim 4> claim 4, if an electric conduction flange is pressed against the opening edge of the breakthrough of the shielding wall of the other party, flow connection of the shielding layer of a shielding electric wire will be made at the shielding wall of the other party through the shielding member connected to the electric conduction flange and it.

[0018] According to the configuration of <invention of claim 5> claim 5, since housing was used as the insertion mold goods concerning a shielding electric wire in addition to the operation effectiveness of above-mentioned claim 1, the drastic cutback of components mark is achieved. And since housing consists of conductive synthetic resin and it sticks to a shielding layer, the whole housing serves as the role of a wrap shielding member, has terminal metallic ornaments, and much more cutback of components mark and the miniaturization of a shielding connector are attained. Moreover, since terminal metallic ornaments are covered in the layer of an insulating tube or insulating resin, they are certainly insulated from conductive housing.

[0019] According to the configuration of <invention of claim 6> claim 6, a metal ring is stuck to a shielding layer by pressure, and is stabilized mutually, while flow connection is made, it is installing two or more protruding pieces from a metal ring, and it contacts in conductive housing and a large area, and it is stabilized mutually and flow connection is made. Thereby, through a metal ring, conductive housing and the shielding layer of a shielding electric wire are stabilized, and flow connection is made.

[0020] If housing of the shielding connector concerning invention of <invention of claim 7> claim 7 is attached in the shielding wall of the other party, at the end side of housing, the junction electric wire stuck to the 2nd sticking-by-pressure section of terminal metallic ornaments by pressure is inserted in shielding Kabeuchi, and the shielding electric wire stuck to the 1st sticking-by-pressure section by pressure will be in the condition of having extended in parallel with the shielding wall of the other party, by the other end side of housing. Here, although Itabe who connects both the sticking-by-pressure section is formed in the shape of L character, since they can be made crooked in a small crookedness radius in the thickness direction compared with a shielding electric wire even if Itabe makes terminal metallic ornaments the same cross section as the core wire of a shielding electric wire, the miniaturization for a flection is attained, as a result the miniaturization of the whole shielding connector is attained. And the junction electric wire inserted in shielding Kabeuchi of the other party can be managed freely, for example, can be bent in the shape of L character, and can be extended to the sense parallel to the shielding wall of the other party. The degree of freedom at the time of this setting up the location like the connection of shielding Kabeuchi of the other party linked to the head side of a junction electric wire becomes possible [ attaining space-saving-ization of increase and shielding Kabeuchi of the other party ].

[0021] According to invention of <invention of claim 8> claim 8, since it is fixable to the condition of having stuck the shielding member to the insulating member by the holddown member, at the time of manufacture of a shielding connector, a shielding member can interfere and deform into other members, or can prevent receiving breakage as much as possible.

[0022]

[Embodiment of the Invention] The <1st operation gestalt>, next the 1st operation gestalt of this invention are explained referring to drawing 1 - drawing 4 . It has a core wire 11, the internal insulating layer 12, the shielding layer 13, and the external coat 14, and the shielding electric wire 10 consists of an axial center side, as shown in drawing 1 . And in the terminal section of the shielding electric wire 10, the core wire 11, the internal insulating layer 12, and the shielding layer 13 are gradually exposed from the head side.

[0023] The cross-section configuration is shown in drawing 2 , and the shielding connector of this operation gestalt is attached in the terminal section of the shielding electric wire 10 in one. In this drawing, signs 20 are terminal metallic ornaments, it has the sticking-by-pressure section 21 which incurvated the metal plate in the shape of U character, and the long tabular plate section 22 is installed from the end of the bottom wall of the sticking-by-pressure section 21. And rigid-angle bending of the plate section 22 is carried out towards the direction (lower part of drawing 2 ) which intersects perpendicularly with the shielding electric wire 10 on the way, and the side-face configuration of the terminal metallic-ornaments 20 whole has become L typeface as shown in drawing 2 . Moreover, at the head of the plate section 22, as shown in drawing 1 , a long hole 23 is formed and the appearance at the head of the plate section 22 is making roundish [ wore corresponding to the radii of the end of said long hole 23 ] .

[0024] As for the above-mentioned terminal metallic ornaments 20, even the part is covered with the insulating tube 24 of heat shrink nature the middle from the end face side. An insulating tube 24 is in the condition that the terminal metallic ornaments 20 were stuck to the core wire 11 by pressure, and the outside of the terminal metallic ornaments 20 lets it pass. And as the end of an insulating tube 24 is a bonnet and the other end is the plate section 22 among the terminal metallic ornaments 20, it considers as the condition of having been located in the part, and the head of the internal insulating layer 12 of the shielding electric wire 10 is heated and shrunk. This has stuck the insulating tube 24 to the edge and the terminal metallic ornaments 20 of the internal insulating layer 12, as shown in drawing 2 .

[0025] The insulating tube 24 is covered in the outside by the shielding member 25 which made the braided wire tubed. The end of the shielding member 25 is allotted to the outside of the shielding layer 13 in piles among the shielding electric wires 10, for example, the sticking-by-pressure piece 26 (refer to drawing 1 ) which makes a metal plate come to curve in the shape of U character is stuck by pressure as \*\* from the side, and, thereby, the end of the shielding member 25 is being fixed to the shielding layer 13 by the condition of having made flow connection. Moreover, the other end of the shielding member 25 is allotted to the condition of having covered the outside of the conducting sleeve 31 with which the electric conduction flange 30 which following-\*\* was equipped, for example, the sticking-by-pressure piece 27 (refer to drawing 1 ) which makes a metal plate come to curve in the shape of U character too is stuck by pressure as \*\* from the side, and, thereby, the other end of the shielding member 25 is being fixed to the electric conduction flange 30 by the condition of having made flow connection.

[0026] The electric conduction flange 30 consists of metal plates, and as shown in drawing 1 and drawing 3 , it makes the so-called pear configuration which made a part of periphery of a disk project to the side at a tapered form. And while the bolt insertion hole 32 is formed in the edge which was tapering off, the terminal insertion hole 33 is formed in the location of the central point of a disk, and four resin incurrent pores 34 are further formed in it so that the periphery section of the terminal insertion hole 33 may be allotted the 4th grade. In addition, about this resin incurrent pore 34, it is not limited to what except four and was allotted at equal intervals also about the arrangement location, but can be set as arbitration. [ that number ] Moreover, in drawing 1 , a sign 31 is a metal conducting sleeve, and as a cylindrical end is extracted to the side, it comes to form flange 31A and it is shown in drawing 2 , it is pressed fit in the terminal insertion hole 33 from the edge of flange 31A and an opposite hand.

[0027] Among the shielding electric wires 10, the head of the external coat 14 is covered by the water proof cylinder part 49, as shown in drawing 2 . The water proof cylinder part 49 inserts the shielding electric wire 10 to the metal mold for resin molding, and it is fabricated by tubed so that the outside surface of the external coat 14 may be covered with the resin with which it was filled up in the metal mold. Moreover, the water proof cylinder part 49 consists of synthetic resin (for example, urethane) softer than the resin which constitutes the housing 40 of the following \*\*.

[0028] Now, the terminal section of the shielding electric wire 10 is covered with the housing 40 which consists of synthetic resin. More, the shielding electric wire 10 is inserted to the metal mold for resin molding, housing 40 changes insulating synthetic resin (for example, polyamide) into a melting condition, and it is filled up with it in metal mold, and it is fabricated by the detail. At this time, among the terminal metallic ornaments 20 stuck to the shielding electric wire 10 by pressure, the head of the plate section 22 is

set to the condition of having inserted in the terminal insertion hole 33 of the electric conduction flange 30, and it fills up with melting resin in metal mold from the head side of that plate section 22. Thereby, while melting resin enters between an insulating tube 24 and the shielding member 25 among housing 40 through the terminal insertion hole 33 of the electric conduction flange 30, melting resin flows into the outside of the shielding member 25 among housing 40 through the surrounding resin incurrent pore 34 of the terminal insertion hole 33. And housing 40 is fabricated in the shape of [ which met the terminal metallic ornaments 20 ] L character, and the electric conduction flange 30 is fixed in the middle of one side of L characters. [0029] Moreover, as for the head side of the plate section 22, the plate section 22 stands the cylinder-like fitting section 41 straight from the apical surface of nothing and its fitting section 41 from the electric conduction flange 30 among housing 40. Furthermore, the O ring slot 42 is formed in the peripheral face of the fitting section 41, and O ring 43 is held here.

[0030] The shielding connector of this operation gestalt constituted as mentioned above is attached in the shielding wall (henceforth "the partner shielding wall 50") which constitutes the outer wall of a motor. As shown in this partner shielding wall 50 at drawing 2, a breakthrough 51 is formed and the screw-thread hole 52 is formed near that breakthrough 51. And a shielding connector is fitting the fitting section 41 into a breakthrough 51, pressing the electric conduction flange 30 against the opening edge, \*\*\*\*ing the bolt B which it let pass to the bolt insertion hole 32, and screwing in a hole 52, and is fixed to the partner shielding wall 50. Then, in the end side of housing 40, while the terminal metallic ornaments 20 stuck to the core wire 11 of the shielding electric wire 10 by pressure rush in into the partner shielding wall 50, the electric conduction flange 30 sticks to the partner shielding wall 50, and flow connection of the shielding layer 13 of the shielding electric wire 10 is made through the electric conduction flange 30 and shielding member 25 at the partner shielding wall 50. And in the other end side of housing 40, the shielding electric wire 10 will be extended in parallel to the partner shielding wall 50. Although the terminal metallic ornaments 20 carry out rigid-angle bending of the plate section 22 prolonged from the sticking-by-pressure section 21 here and it is formed in the shape of L character In the thickness direction, even if it makes the plate section 22 into the same cross section as the core wire 11 of the shielding electric wire 10, since you can make it crooked in a small crookedness radius compared with the shielding electric wire 10, the miniaturization for a flection is attained, as a result the miniaturization of the whole shielding connector is attained.

[0031] Thus, according to the shielding connector of this operation gestalt, the shielding electric wire 10 can be managed in the condition of having extended in parallel to the partner shielding wall 50, and, moreover, the miniaturization of a shielding connector can be attained. Moreover, since housing 40 was used as the insertion mold goods concerning the shielding electric wire 10, the drastic cutback of components mark is achieved compared with the thing of attachment structure. Furthermore, since the terminal metallic ornaments 20 were covered with the insulating tube 24, there is no fear of the shielding member 25 and the terminal metallic ornaments 20 contacting with the resin pressure at the time of shaping of housing 40. Moreover, since an insulating tube 24 is heat shrink nature, it is stuck to the terminal metallic ornaments 20, and is settled in a small tooth space.

[0032] The shielding connector of the <2nd operation gestalt> book operation gestalt is shown in drawing 5, only a different configuration from said operation gestalt is explained hereafter, the same sign is attached about the same configuration as said 1st operation gestalt, and duplication explanation is omitted.

[0033] The flow sleeve 60 is attached in the outside of the shielding layer 13 among the shielding electric wires 10. The flow sleeve 60 juts a flange 62 out of the end of a barrel 61 towards the side, and makes the structure which carried out deep drawing of the rim section of the flange 62 so that it might be concurrent with the shaft orientations of a barrel 61, and formed the major-diameter cylinder part 63. And the barrel 61 is closed to the shielding layer 13.

[0034] In drawing 5, it is a shielding member, a sign 64 comes to be crooked in the shape of L character in a metallic pipe, and at the end, after forming two or more notching in alignment with shaft orientations which is not illustrated, forming two or more strip-of-paper sections 65 and pressing the end of the shielding member 64 fit in the terminal insertion hole 33 of the electric conduction flange 30, it has started these strips-of-paper section 65 outside. Moreover, among the shielding members 64, from opening of the opposite hand of the electric conduction flange 30, it lets the shielding electric wire 10 pass from the terminal metallic-ornaments 20 side, and fitting adhesion of the major-diameter cylinder part 63 of the above mentioned flow sleeve 60 is carried out into the shielding member 64.

[0035] A shielding connector can be attached in the partner shielding wall 50 also as such a configuration, and the shielding electric wire 10 can be managed in the direction which was concurrent with the partner shielding wall 50, and a cutback and miniaturization of components mark can be attained.



[0036] The shielding connector of the <3rd operation gestalt> book operation gestalt is shown in drawing 6 , only a different configuration from said operation gestalt is explained hereafter, the same sign is attached about the same configuration as said 1st operation gestalt, and duplication explanation is omitted.

[0037] As shown in drawing 6 , the shielding layer 13 is equipped with the metal ring 70 among the shielding electric wires 10. Moreover, from the end of a metal ring 70, while two or more protruding pieces 71 \*\*\*\*\* and are formed towards the side, penetration formation of the hole 71A is carried out at each protruding piece 71. And it is stuck to the shielding layer 13 by pressure, and a metal ring 70 is stabilized mutually, and flow connection is made and it is laid underground in the housing 73 of the following \*\*.

[0038] Conductive synthetic resin constitutes housing 73 from this operation gestalt. Housing 73 exposes the shielding layer 13, is in the condition which stuck said metal ring 70 to it by pressure, inserts the shielding electric wire 10 in the metal mold for resin shaping, and, more specifically, is fabricated in the shape of [ corresponding to the terminal metallic ornaments 20 ] L character with the conductive synthetic resin with which it was filled up in the metal mold. Moreover, the flange 74 pressed against the partner shielding wall 50 is also really fabricated by housing 73.

[0039] Thus, according to the shielding connector of this operation gestalt, since housing 40 consists of conductive synthetic resin and sticks to the shielding layer 13 of the shielding electric wire 10, the housing 40 whole serves as and has the role of the shielding member which covered the terminal metallic ornaments 20, and much more cutback of components mark and the miniaturization of a shielding connector are attained. And a metal ring 70 is stuck to the shielding layer 13 by pressure, and is stabilized mutually, it is installing two or more protruding pieces 71 from a metal ring 70, and it contacts in the housing 73 which consists of conductive synthetic resin, and a large area, and it is stabilized mutually and flow connection is made while flow connection is made. Thereby, through a metal ring 70, the conductive housing 73 and the shielding layer 13 of the shielding electric wire 10 are stabilized, and flow connection is made.

[0040] The <4th operation gestalt>, then the 4th operation gestalt of this invention are explained considering drawing 7 as reference. In addition, below, only a different configuration from the above-mentioned 1st operation gestalt is explained, and the explanation which overlaps while attaching the same sign is omitted about the same configuration as the 1st operation gestalt.

[0041] The 1st sticking-by-pressure section 82 and the 2nd sticking-by-pressure section 83 which were formed in Itabe's 81 ends which the terminal metallic ornaments 80 carried out rigid-angle bending of the metal plate on the way, and were formed in the shape of L character by curving in the shape of [ both ] U character are prepared. While the core wire 11 of the shielding electric wire 10 is stuck by pressure, the core wire 96 of the junction electric wire 95 of a configuration of having covered the core wire 96 by pre-insulation 97 is stuck to the 2nd sticking-by-pressure section 83 by pressure by the 1st sticking-by-pressure section 82. Where both the electric wires 10 and 95 are stuck by pressure, the insulating tube 84 of heat shrink nature is put on these terminal metallic ornaments 80, and on both sides of the terminal metallic ornaments 80, it is stuck to an insulating tube 84 from the edge of the internal insulating layer 12 of the shielding electric wire 10 by heating this insulating tube 84 and making it contract to the whole field covering the edge of the pre-insulation 97 of the junction electric wire 95.

[0042] It is covered after the shielding member 85 made tubed has stuck the braided wire to the outside of an insulating tube 84. Where sheathing of the end of the shielding member 85 is carried out to the shielding layer 13 of the shielding electric wire 10, the U character-like sticking-by-pressure piece 26 is stuck by pressure from an outside. Where sheathing of the other end of the shielding member 85 is carried out to the conducting sleeve 87 inserted in the terminal insertion hole 90 of the electric conduction flange 86, the U character-like sticking-by-pressure piece 27 is stuck by pressure from an outside. Thereby, flow connection of the shielding member 85 is made at the shielding layer 13 and a conducting sleeve 87. And the shielding member 85 is being fixed to the adhesion condition to the insulating tube 84 by the holddown member 88 which consists of copper wire being twisted around the outside of the shielding member 85.

[0043] While the electric conduction flange 86 consists of metal plates, the appearance serves as a pear configuration so that drawing 1 may be considered as reference. While the bolt insertion hole 89 and the terminal insertion hole 90 penetrate and are formed, two or more 1st resin incurrent pores 91 by cutting the hole edge of the terminal insertion hole 90 selectively are penetrated and formed in the electric conduction flange 86. It is the location which shifted in the direction of a path from the 1st resin incurrent pore 91 on the predetermined dimension outside, and two or more 2nd resin incurrent pores 92 are penetrated and formed in the location [ hoop direction ] shifted the degree of predetermined angle in the 1st resin incurrent pore 91 at the electric conduction flange 86.

[0044] The terminal section of the shielding electric wire 10 connected by the terminal metallic ornaments

80 and the junction electric wire 95 is covered by the seal barrel 93 which consists of synthetic resin, and the seal barrel 93 is further covered with housing 94. The seal barrel 93 inserts the shielding electric wire 10 and the junction electric wire 95 to a primary molding die, changes into a melting condition insulating synthetic resin (for example, urethane) softer than the resin which constitutes housing 94, and is filled up with and formed in metal mold at a detail. At this time, the synthetic resin of a melting condition spreads before and after the electric conduction flange 86 through the 1st resin incurrent pore 91 of the electric conduction flange 86. The situation of the shielding member 85 deforming the shielding member 85 in this process with the injection pressure of the synthetic resin with which it fills up in metal mold since it is being fixed to the insulating tube 84 by the holddown member 88 in the state of adhesion, or receiving breakage is prevented as much as possible. The seal barrel 93 is fabricated in the shape of [ which met the terminal metallic ornaments 80 ] L character, and the field covering the edge of the pre-insulation 97 of the junction electric wire 95 fabricates an insulating tube 84 and the whole shielding member 85 from the edge of the external coat 14 of the shielding electric wire 10 with a wrap. The surroundings of the shielding electric wire 10 and the junction electric wire 95 are maintained by this seal barrel 93 in the shape of liquid dense. On the other hand, what fabricated the seal barrel 93 as mentioned above is inserted to a secondary molding die, housing 94 changes insulating synthetic resin (for example, polyamide) into a melting condition, and it is filled up with it in metal mold, and it is fabricated. At this time, the synthetic resin of a melting condition spreads before and after the electric conduction flange 86 through the 2nd resin incurrent pore 92 of the electric conduction flange 86. And housing 94 is fabricated in the shape of [ in alignment with the seal barrel 93 ] L character, and the electric conduction flange 86 is fixed in the middle of one side of L characters.

[0045] The shielding connector of this operation gestalt constituted as mentioned above is attached in the partner shielding wall 50. The fitting section 41 of housing 94 is fitted into a breakthrough 51, inserting in a breakthrough 51 into the partner shielding wall 50 first in installation through the junction electric wire 95 drawn from housing 94 on the right-hand side of the graphic display from a head side (the edge stuck to the 2nd sticking-by-pressure section 83 by pressure is an edge of an opposite hand). A shielding connector is fixed to the partner shielding wall 50 by \*\*\*\*ing the bolt B which it let pass to the bolt insertion hole 89, and screwing in a hole 52, pressing the electric conduction flange 86 against the opening edge of a breakthrough 51. At this time, the shielding electric wire 10 drawn from housing 94 is in the condition of having extended in the partner shielding wall 50 and parallel, out of the partner shielding wall 50. On the other hand, since the junction electric wire 95 inserted into the partner shielding wall 50 can be managed to the free sense in the partner shielding wall 50, it can be bent, for example in the shape of L character, and can be extended to the sense parallel to the partner shielding wall 50. Thereby, at least the connection by the side of the device which connects the head side of the junction electric wire 95 can arrange in the free location within the partner shielding wall 50 about (it does not illustrate). It has and it becomes possible to attain space-saving-ization within the partner shielding wall 50.

[0046] It is not limited to an operation gestalt and an operation gestalt which is explained below is also included in the technical range of this invention, and further, within limits which do not deviate from a summary besides the following, operation gestalt > this invention besides < can be changed variously, and can be carried out.

[0047] (1) Although housing was used as the insertion mold goods concerning the shielding electric wire 10 with said each operation gestalt, it is good also as a configuration which fabricates housing beforehand and is attached to a shielding electric wire, for example. After more specifically considering tubed housing crooked in the shape of L character as the configuration divided into two at vertical division and sticking L character-like terminal metallic ornaments to a shielding electric wire by pressure, it is good also as a configuration held and attached so that they may be inserted between housing divided into two.

[0048] (2) Although the shielding member 25 which consists of a braided wire was connected to the shielding layer 13 with said 1st operation gestalt, it is good also as a configuration which extended shielding layer 13 the very thing of the shielding electric wire 10 for a long time, and was replaced with the shielding member 25, for example.

[0049] (3) Moreover, in said 1st operation gestalt, the outside of the shielding member 25 which consisted of braided wires can also be made a compact configuration on both sides of the shielding member 25 by shrinking a bonnet and this with the insulating tube of heat shrink nature between the insulating tube and the insulating tube 24 of terminal metallic-ornaments 20 outside surface.

[0050] (4) It is good also as a configuration which applied the insulating resin of a melting condition to the predetermined part of terminal metallic ornaments with said each operation gestalt, for example although terminal metallic ornaments were covered with the insulating tube 24 of heat shrink nature.

[0051] (5) Although the above-mentioned 1st and 2 operation gestalt showed the case where predetermined spacing was secured between the shielding member and the insulating tube which wraps terminal metallic ornaments In case housing is fabricated, when there is a possibility of a shielding member deforming with the resin pressure of the synthetic resin of the melting condition with which it fills up in metal mold, or receiving breakage While attaching a shielding member in an insulating tube in the state of adhesion, you may make it fix by holddown members, such as copper wire, from the outside like the above-mentioned 4th operation gestalt.

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[Translation done.]

\*NOTICES\*

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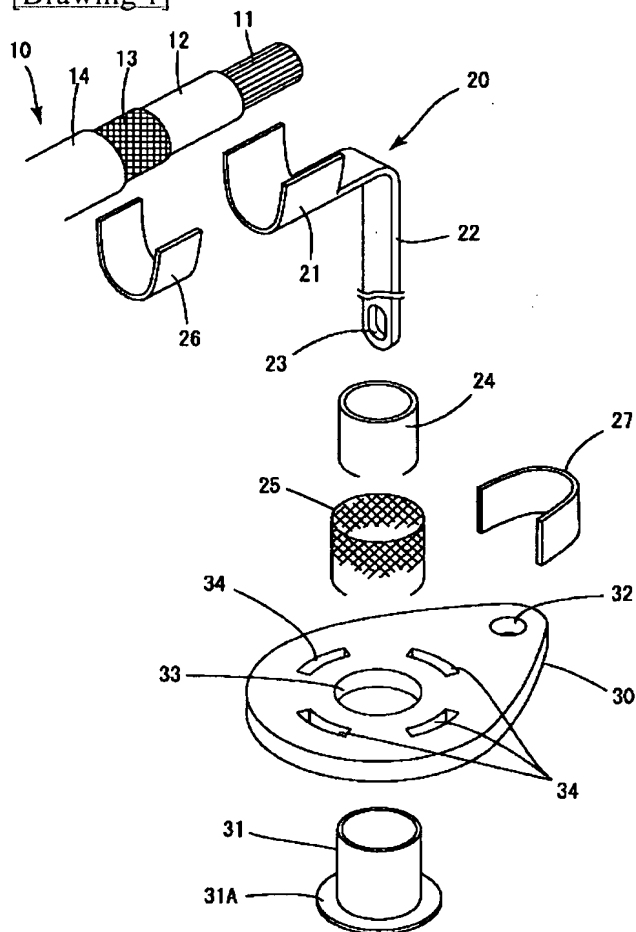
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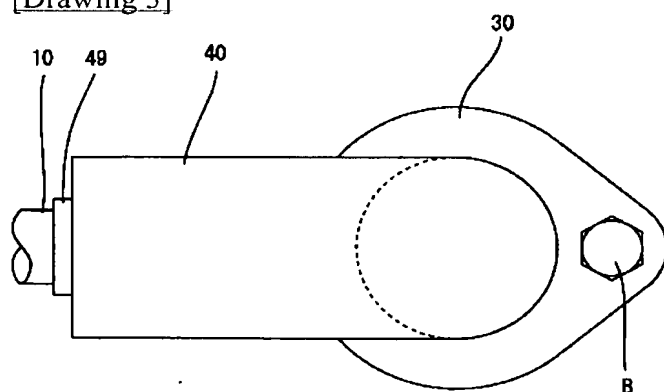
DRAWINGS

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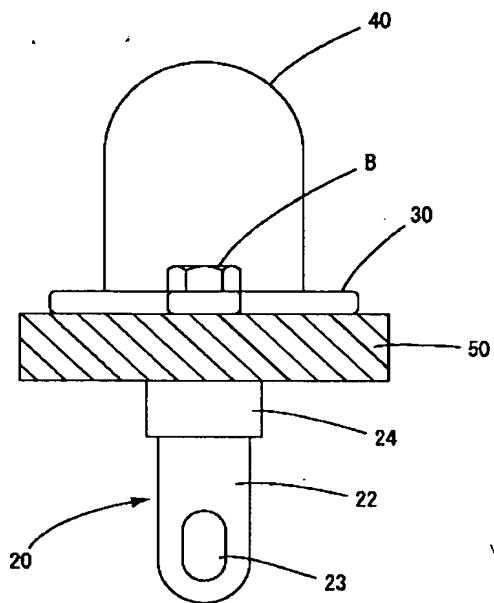
[Drawing 1]



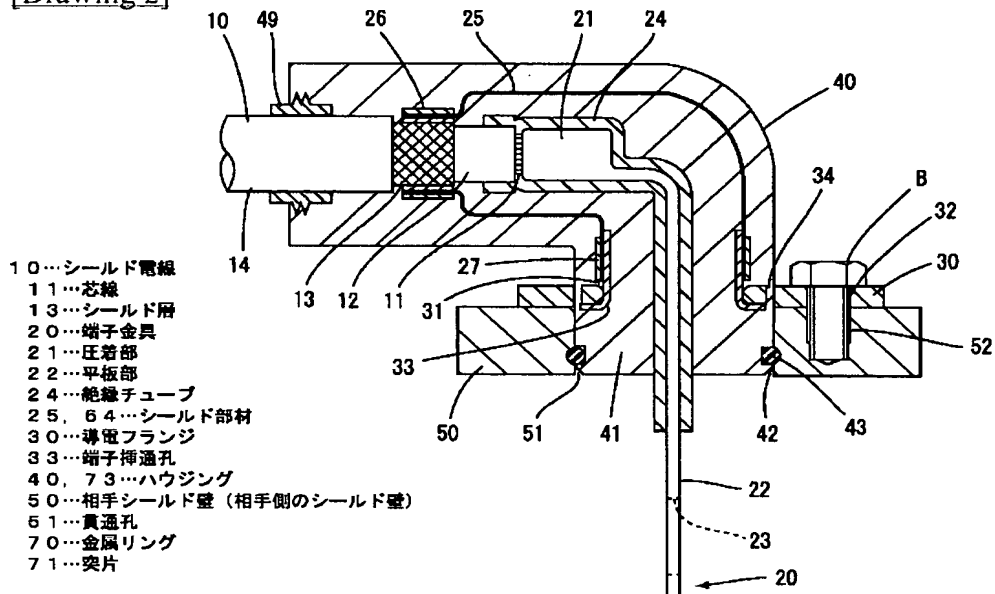
[Drawing 3]



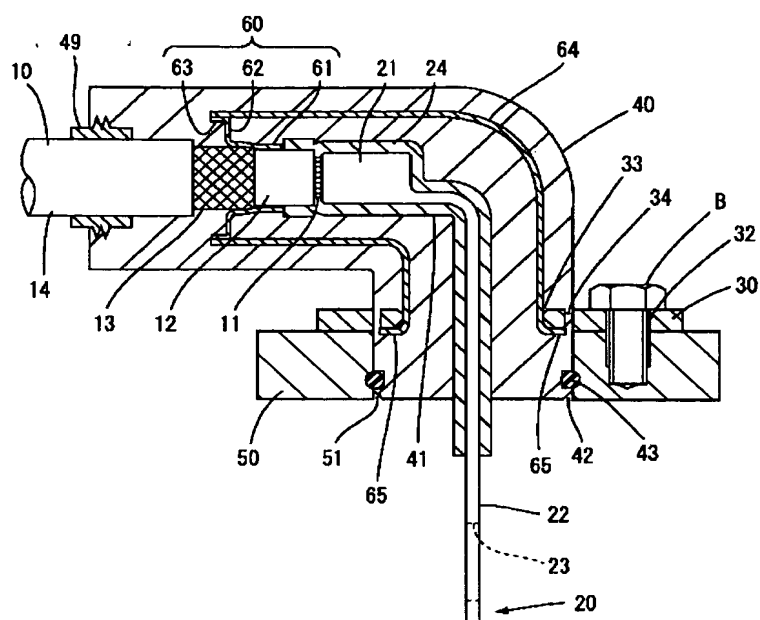
[Drawing 4]



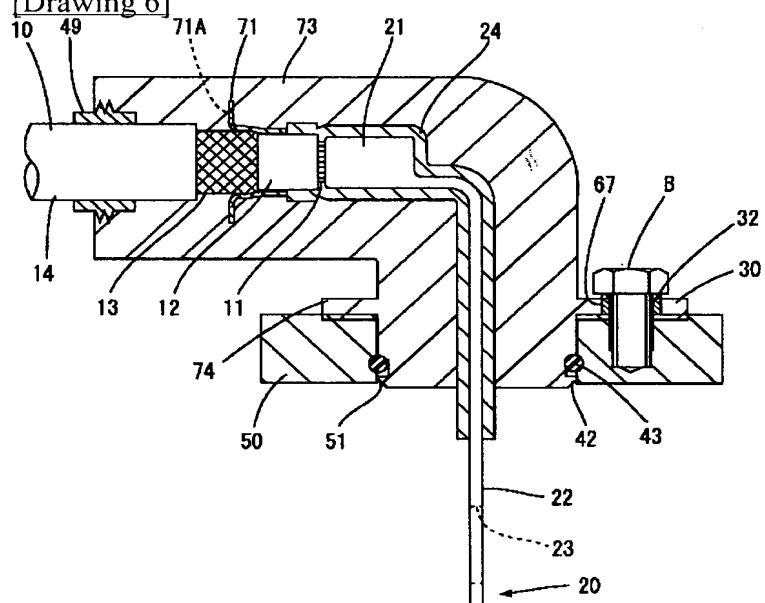
[Drawing 2]



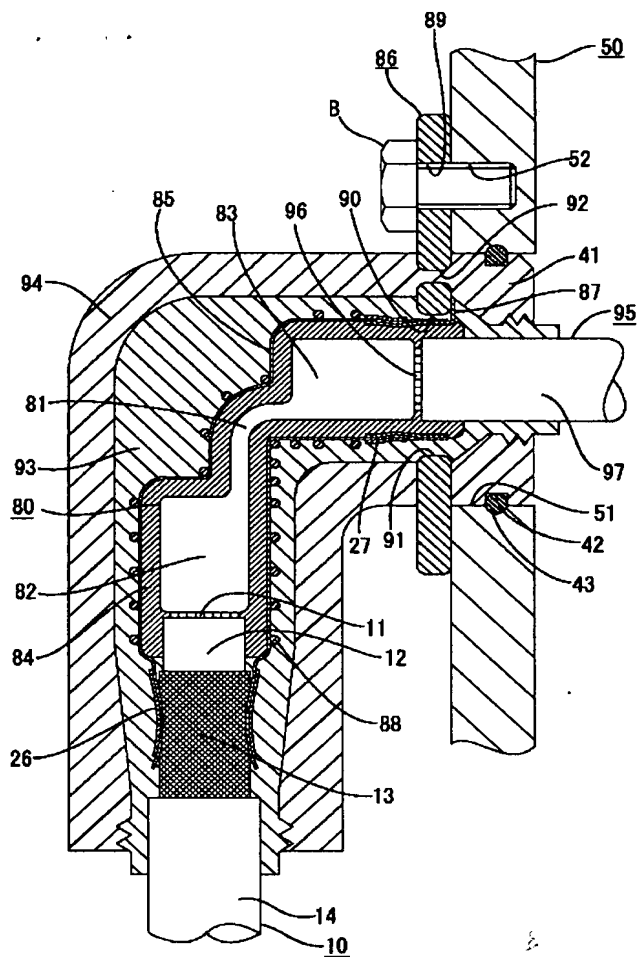
[Drawing 5]



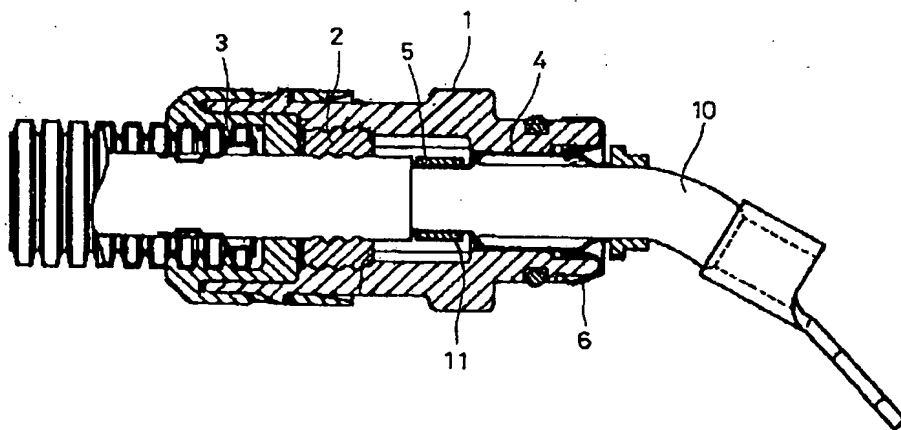
[Drawing 6]



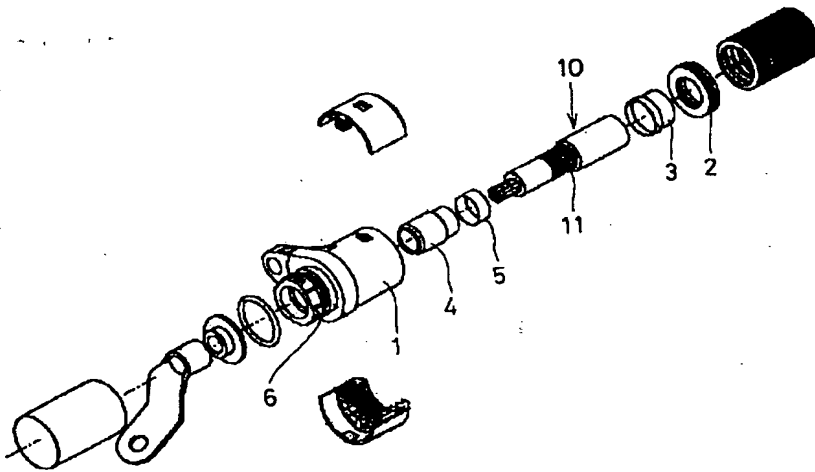
[Drawing 7]



[Drawing 8]



[Drawing 9]



[Translation done.]



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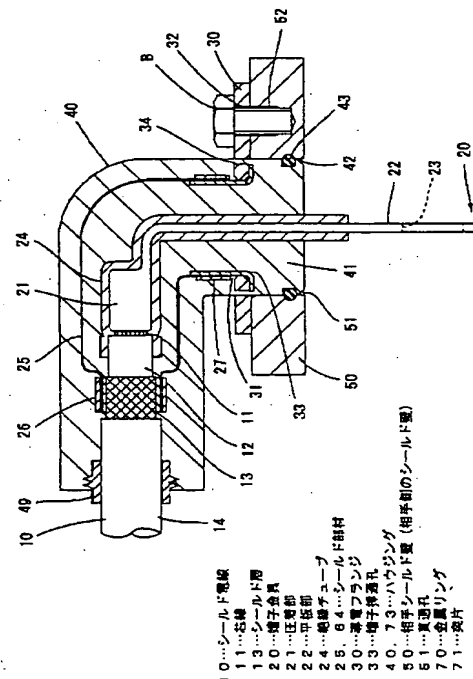
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(54) 【発明の名称】 シールドコネクタ

(57) 【要約】

【課題】 シールド電線を相手側のシールド壁と並行した方向に取り廻すことができ、かつ、小型化可能なシールドコネクタを提供する。

【解決手段】 シールドコネクタの内部に収容された端子金具20は、圧着部21から延びた平板部22を直角曲げしてL字状に形成されているが、平板部22は、シールド電線10の芯線11と同じ断面積にしたとしても、厚さ方向では、シールド電線10に比べて小さな屈曲半径で屈曲させることができるから、屈曲部分の小型化が図られ、ひいてはシールドコネクタ全体の小型化が図られる。



## 【特許請求の範囲】

【請求項1】 シールド電線の端末部を覆ったハウジングの内部に、前記シールド電線の芯線に圧着した端子金具の基端側を収容してなり、相手側のシールド壁に形成した貫通孔に取り付けられて、前記シールド電線のシールド層を、前記相手側のシールド壁に導通接続し、かつ、前記端子金具の先端側を前記相手側のシールド壁内に突入させた状態に保持するシールドコネクタにおいて、

前記端子金具は、前記芯線への圧着部から連続形成した平板部を曲げて、全体がし字状に形成されると共に、その端子金具の基端側から先端寄り位置までを、絶縁部材で覆われ、

前記ハウジングの内部には、前記端子金具を覆った前記絶縁部材の外側を覆うシールド部材が設けられ、そのシールド部材の一端は、前記シールド電線の前記シールド層に連続し又は導通接続される一方、他端は、前記ハウジングのうち前記相手側のシールド壁との当接部分に配されたことを特徴とするシールドコネクタ。

【請求項2】 前記端子金具を覆った前記絶縁部材は、熱収縮性の絶縁チューブで構成されたか、または、前記端子金具に熔融状態の絶縁性樹脂を塗布して形成されたことを特徴とする請求項1記載のシールドコネクタ。

【請求項3】 前記ハウジングは、前記シールド電線をインサートした樹脂成形用の金型内に、合成樹脂を充填して形成されたことを特徴とする請求項1又は2記載のシールドコネクタ。

【請求項4】 導電性部材に端子挿通孔を貫通形成してなる導電フランジを、前記シールド電線と共に前記金型内に配して、前記端子挿通孔に、前記端子金具を挿通させ、さらに、前記シールド部材の先端を前記導電フランジに接続して、前記金型内に充填した合成樹脂にて前記ハウジングを成形したことを特徴とする請求項3記載のシールドコネクタ。

【請求項5】 シールド電線の端末部を覆ったハウジングの内部に、前記シールド電線の芯線に圧着した端子金具の基端側を収容してなり、相手側のシールド壁に形成した貫通孔に取り付けられて、前記シールド電線のシールド層を、前記相手側のシールド壁に導通接続し、かつ、前記端子金具の先端側を前記相手側のシールド壁内に突入させた状態に保持するシールドコネクタにおいて、

前記端子金具は、前記芯線への圧着部から連続形成した平板部を、前記シールド電線と直交する方向に向けて直角曲げて、全体がし字状に形成されると共に、その端子金具の基端側から先端寄り位置までを、熱収縮性の絶縁チューブで密着して覆うか、又は、熔融状態の絶縁性樹脂を塗布して覆い、

前記ハウジングは、前記シールド層を露出させた状態で前記シールド電線を樹脂成形用の金型内にインサート

し、そこに充填した導電性の合成樹脂にて、前記端子金具に対応したし字状に成形されたことを特徴とするシールドコネクタ。

【請求項6】 前記シールド電線のうち露出させたシールド層には、金属リングが圧着されると共に、その金属リングから複数の突片が側方に向けて延設され、前記金属リング及び前記突片の周りに前記導電性の合成樹脂を充填して前記ハウジングが成形されたことを特徴とする請求項5記載のシールドコネクタ。

【請求項7】 シールド電線の端末部を覆ったハウジングの内部に、前記シールド電線の芯線に圧着した端子金具を収容してなり、相手側のシールド壁に形成した貫通孔に取り付けられて、前記シールド電線のシールド層を、前記相手側のシールド壁に導通接続するシールドコネクタにおいて、

前記端子金具は、前記芯線への第1圧着部から連続形成した板部を曲げて、全体がし字状に形成されると共に、その端子金具が絶縁部材で覆われ、

前記ハウジングの内部には、前記端子金具を覆った前記絶縁部材の外側を覆うシールド部材が設けられ、そのシールド部材の一端は、前記シールド電線の前記シールド層に連続し又は導通接続される一方、他端は、前記ハウジングのうち相手側のシールド壁との当接部分に配され、

前記端子金具における前記第1圧着部と反対側の端部には、前記ハウジングの内部に位置して中継電線を圧着した第2圧着部が設けられていることを特徴とするシールドコネクタ。

【請求項8】 前記絶縁部材を覆う前記シールド部材の外側には、シールド部材を絶縁部材に対して密着状態に固定可能な固定部材が設けられていることを特徴とする請求項1、請求項2、請求項3、請求項4または請求項7のうちのいずれかに記載のシールドコネクタ。

## 【発明の詳細な説明】

【0001】

【発明の属する技術分野】 本発明は、シールド電線の端末部に設けられて、相手側のシールド壁に形成した貫通孔に取り付けられるシールドコネクタに関する。

【0002】

【従来の技術】 従来、この種のシールドコネクタの一例として、特開平11-26093号公報に掲載されたものは、図8及び図9に示すように、真つ直ぐ延びた筒状のハウジング1内に、ゴムリング2、保持リング3、導電スリーブ4、押さえリング5を備え、さらに、ハウジング1の前端外周面に、導通接触片6を配置した構造をなす。そして、ハウジング1が、シールド電線10の端末部を覆うように取り付けられ、ハウジング1のうちフランジより先端側を、相手側のシールド壁に形成した貫通孔に嵌合させ、フランジの一部が図示しないボルトにて相手側のシールド壁にねじ止めされる。

## 【0003】

【発明が解決しようとする課題】ところで、スペースの関係上、シールド電線を相手側のシールド壁と並行した方向に取り廻したい場合がある。しかしながら、上記した従来のシールドコネクタでは、そのような取り廻し構造をとれない。これに対し、例えば、上記した筒状のハウジング1を、単にし字状に屈曲させて、その内部でシールド電線を湾曲させた構成とすると、シールド電線の許容屈曲半径の関係上、シールドコネクタ全体が大きくなってしまふ。

【0004】また、従来のシールドコネクタは、基本構成部品（上記した符号1～6を付した部品）だけでも6点もあり、それ以外の細かい部品を合わせると、図9に示すように部品点数が非常に多くなるため、従来の構造を単に変形しただけでは、シールドコネクタが大型化してしまふ。

【0005】本発明は、上記事情に鑑みてなされたもので、シールド電線を相手側のシールド壁と並行した方向に取り廻すことができ、かつ、小型化可能なシールドコネクタの提供を目的とする。

## 【0006】

【課題を解決するための手段】上記目的を達成するため、請求項1の発明に係るシールドコネクタは、シールド電線の端末部を覆ったハウジングの内部に、前記シールド電線の芯線に圧着した端子金具の基端側を収容してなり、相手側のシールド壁に形成した貫通孔に取り付けられて、前記シールド電線のシールド層を、前記相手側のシールド壁に導通接続し、かつ、前記端子金具の先端側を前記相手側のシールド壁内に突入させた状態に保持するシールドコネクタにおいて、前記端子金具は、前記芯線への圧着部から連続形成した平板部を曲げて、全体がし字状に形成されると共に、その端子金具の基端側から先端寄り位置までを、絶縁部材で覆われ、前記ハウジングの内部には、前記端子金具を覆った前記絶縁部材の外側を覆うシールド部材が設けられ、そのシールド部材の一端は、前記シールド電線の前記シールド層に連続し又は導通接続される一方、他端は、前記ハウジングのうち前記相手側のシールド壁との当接部分に配されたところに特徴を有する。

【0007】請求項2の発明は、請求項1記載のシールドコネクタにおいて、端子金具を覆った絶縁部材は、熱収縮性の絶縁チューブで構成されたか、または、端子金具に熔融状態の絶縁性樹脂を塗布して形成されたところに特徴を有する。

【0008】請求項3の発明は、請求項1又は2記載のシールドコネクタにおいて、ハウジングは、シールド電線をインサートした樹脂成形用の金型内に、合成樹脂を充填して成形されたところに特徴を有する。

【0009】請求項4の発明は、請求項3記載のシールドコネクタにおいて、導電性部材に端子挿通孔を貫通形

成してなる導電フランジを、シールド電線と共に金型内に配して、端子挿通孔に、端子金具を挿通させ、さらに、シールド部材の先端を導電フランジに接続して、金型内に充填した合成樹脂にてハウジングを成形したところに特徴を有する。

【0010】請求項5の発明に係るシールドコネクタは、シールド電線の端末部を覆ったハウジングの内部に、シールド電線の芯線に圧着した端子金具の基端側を収容してなり、相手側のシールド壁に形成した貫通孔に取り付けられて、シールド電線のシールド層を、相手側のシールド壁に導通接続し、かつ、端子金具の先端側を相手側のシールド壁内に突入させた状態に保持するシールドコネクタにおいて、端子金具は、芯線への圧着部から連続形成した平板部を、シールド電線と直交する方向に向けて直角曲げて、全体がし字状に形成されると共に、その端子金具の基端側から先端寄り位置までを、熱収縮性の絶縁チューブで密着して覆うか、又は、熔融状態の絶縁性樹脂を塗布して覆い、ハウジングは、シールド層を露出させた状態でシールド電線を樹脂成形用の金型内にインサートし、そこに充填した導電性の合成樹脂にて、端子金具に対応したし字状に成形されたところに特徴を有する。

【0011】請求項6の発明は、請求項5記載のシールドコネクタにおいて、シールド電線のうち露出させたシールド層には、金属リングが圧着されると共に、その金属リングから複数の突片が側方に向けて延設され、金属リング及び突片の周りに導電性の合成樹脂を充填してハウジングが成形されたところに特徴を有する。

【0012】請求項7の発明に係るシールドコネクタは、シールド電線の端末部を覆ったハウジングの内部に、前記シールド電線の芯線に圧着した端子金具を収容してなり、相手側のシールド壁に形成した貫通孔に取り付けられて、前記シールド電線のシールド層を、前記相手側のシールド壁に導通接続するシールドコネクタにおいて、前記端子金具は、前記芯線への第1圧着部から連続形成した板部を曲げて、全体がし字状に形成されると共に、その端子金具が絶縁部材で覆われ、前記ハウジングの内部には、前記端子金具を覆った前記絶縁部材の外側を覆うシールド部材が設けられ、そのシールド部材の一端は、前記シールド電線の前記シールド層に連続し又は導通接続される一方、他端は、前記ハウジングのうち相手側のシールド壁との当接部分に配され、前記端子金具における前記第1圧着部と反対側の端部には、前記ハウジングの内部に位置して中継電線を圧着した第2圧着部が設けられているところに特徴を有する。

【0013】請求項8の発明は、請求項1、請求項2、請求項3、請求項4または請求項7のうちいずれかに記載のシールドコネクタにおいて、前記絶縁部材を覆う前記シールド部材の外側には、シールド部材を絶縁部材に対して密着状態に固定可能な固定部材が設けられている

ところに特徴を有する。

#### 【0014】

【発明の作用及び効果】<請求項1の発明>請求項1の発明に係るシールドコネクタのハウジングを、相手側のシールド壁に取り付けると、ハウジングの一端側では、シールド電線の芯線に圧着した端子金具がシールド壁内に突入し、ハウジングの他端側では、シールド電線が、相手側のシールド壁と並行して延びた状態になる。ここで、端子金具は、圧着部から延びた平板部を直角曲げしてし字状に形成されているが、平板部は、シールド電線の芯線と同じ断面積にしたとしても、厚さ方向では、シールド電線に比べて小さな屈曲半径で屈曲させることができるから、屈曲部分の小型化が図られ、ひいてはシールドコネクタ全体の小型化が図られる。

【0015】<請求項2の発明>請求項2の構成では、端子金具は、熱収縮性の絶縁チューブを加熱して密着状態に覆われるか、熔融状態の絶縁性樹脂を塗布してその絶縁性樹脂の層に覆われるから、僅かなスペースで、端子金具とシールド部材とを絶縁することができ、シールドコネクタの小型化が図られる。なお、端子金具に、熔融状態の絶縁性樹脂を塗布するには、例えば、熔融状態に絶縁性樹脂に端子金具を漬けるいわゆるディッピング処理が挙げられる。

【0016】<請求項3の発明>請求項3の構成では、ハウジングを、シールド電線に係るインサート成形品にしたから、組み付け構造のものに比べて、部品点数の大幅な削減を図ることができる。また、インサート成形の前に、前記した熱収縮性の絶縁チューブ又は絶縁性樹脂の層にて端子金具を覆えば、ハウジング成形時の樹脂圧にて、シールド部材が端子金具に接触する事態を防ぐことができる。

【0017】<請求項4の発明>請求項4の構成では、導電フランジを、相手側のシールド壁の貫通孔の開口縁に押し当てると、その導電フランジ及びそれに接続されたシールド部材を介して、シールド電線のシールド層が、相手側のシールド壁に導通接続される。

【0018】<請求項5の発明>請求項5の構成によれば、上記請求項1の作用効果に加え、ハウジングを、シールド電線に係るインサート成形品にしたから、部品点数の大幅な削減が図られる。しかも、ハウジングは、導電性の合成樹脂で構成されて、シールド層に密着するから、ハウジング全体が端子金具を覆うシールド部材の役割を兼ね、もって部品点数のより一層の削減と、シールドコネクタの小型化が図られる。また、端子金具は絶縁チューブ又は絶縁性樹脂の層にて覆われているから、導電性のハウジングから、確実に絶縁される。

【0019】<請求項6の発明>請求項6の構成によれば、金属リングは、シールド層に圧着されて互いに安定して導通接続されると共に、金属リングから複数の突片を延設することで、導電性のハウジングと広い面積で接

触し、互いに安定して導通接続される。これにより、導電性のハウジングとシールド電線のシールド層とが、金属リングを介して、安定して導通接続される。

【0020】<請求項7の発明>請求項7の発明に係るシールドコネクタのハウジングを、相手側のシールド壁に取り付けると、ハウジングの一端側では、端子金具の第2圧着部に圧着した中継電線がシールド壁内に挿入され、ハウジングの他端側では、第1圧着部に圧着したシールド電線が相手側のシールド壁と平行して延びた状態となる。ここで、端子金具は、両圧着部を繋ぐ板部がし字状に形成されているが、板部は、シールド電線の芯線と同じ断面積にしたとしても、厚さ方向では、シールド電線に比べて小さな屈曲半径で屈曲させることができるから、屈曲部分の小型化が図られ、ひいてはシールドコネクタ全体の小型化が図られる。しかも、相手側のシールド壁内に挿入した中継電線は、自由に取回すことができ、例えばし字状に折り曲げて、相手側のシールド壁と平行な向きに延ばすことができる。これにより、中継電線の先端側に接続する相手側のシールド壁内の接続部位の位置を設定する際の自由度が増し、また相手側のシールド壁内の省スペース化を図ることが可能となる。

【0021】<請求項8の発明>請求項8の発明によれば、固定部材によりシールド部材を絶縁部材に密着した状態に固定することができるから、シールドコネクタの製造時にシールド部材が他の部材に干渉するなどして変形したり損傷を受けるのを極力防ぐことができる。

#### 【0022】

【発明の実施の形態】<第1実施形態>次に、本発明の第1実施形態について、図1～図4を参照しつつ説明する。シールド電線10は、図1に示すように、軸心側から芯線11、内部絶縁層12、シールド層13、外部被覆14を備えてなる。そして、シールド電線10の端末部では、先端側から、芯線11、内部絶縁層12及びシールド層13が、段階的に露出されている。

【0023】本実施形態のシールドコネクタは、その断面形状が図2に示されており、シールド電線10の端末部に一体的に取り付けられている。同図において、符号20は、端子金具であって、金属板をU字状に湾曲させた圧着部21を備え、その圧着部21の底壁の一端から長板状の平板部22が延設されている。そして、平板部22は、途中でシールド電線10と直交する方向(図2の下方)に向けて直角曲げされ、端子金具20全体の側面形状が、図2に示すように、し字形になっている。また、平板部22の先端には、図1に示すように、長孔23が形成され、平板部22の先端の外形は、前記長孔23の一端の円弧に対応して丸みを帯びた形状をなしている。

【0024】上記端子金具20は、その基端側から途中部分までが、熱収縮性の絶縁チューブ24にて覆われている。絶縁チューブ24は、端子金具20が芯線11に

圧着された状態で、その端子金具20の外側に通される。そして、絶縁チューブ24の一端が、シールド電線10の内部絶縁層12の先端を覆い、かつ、他端が端子金具20のうち平板部22の途中部分に位置した状態とされ、加熱して収縮させてある。これにより、絶縁チューブ24は、図2に示すように、内部絶縁層12の端部及び端子金具20に密着している。

【0025】絶縁チューブ24は、その外側を、編組線を筒状にしたシールド部材25にて覆われている。シールド部材25の一端は、シールド電線10のうちシールド層13の外側に重ねて配されて、例えば金属板をU字状に湾曲させてなる圧着片26（図1参照）を側方から宛って圧着してあり、これにより、シールド部材25の一端がシールド層13に導通接続した状態に固定されている。また、シールド部材25の他端は、次述する導電フランジ30に備えた導電スリーブ31の外側を覆った状態に配されて、例えばやはり金属板をU字状に湾曲させてなる圧着片27（図1参照）を側方から宛って圧着してあり、これにより、シールド部材25の他端が導電フランジ30に導通接続した状態に固定されている。

【0026】導電フランジ30は、金属板で構成され、図1及び図3に示すように、円板の周縁の一部を側方に先細り状に突出させた、いわゆる洋梨形状をなす。そして、先細りとなった端部には、ボルト挿通孔32が形成される一方、円板の中心点の位置には、端子挿通孔33が形成され、さらに、その端子挿通孔33の周縁部を4等配するように、4つの樹脂流入孔34が形成されている。なお、この樹脂流入孔34については、その数が4つ以外でもよく、また配設位置についても等間隔に配したものに限定されず任意に設定することができる。また、図1において、符号31は、金属製の導電スリーブであって、円筒の一端を側方に絞って鏝部31Aを形成してなり、図2に示すように、鏝部31Aと反対側の端部から端子挿通孔33内に圧入されている。

【0027】シールド電線10のうち外部被覆14の先端は、図2に示すように、防水筒部49にて覆われている。防水筒部49は、シールド電線10を樹脂成型用の金型にインサートし、その金型内に充填した樹脂により外部被覆14の外側を覆うように筒状に成形されている。また、防水筒部49は、次述のハウジング40を構成する樹脂より、柔らかい合成樹脂（例えば、ウレタン）よりなる。

【0028】さて、シールド電線10の端末部は、合成樹脂よりなるハウジング40にて覆われている。より詳細には、ハウジング40は、シールド電線10を、樹脂成型用の金型にインサートし、絶縁性の合成樹脂（例えば、ポリアミド）を、溶融状態にして金型内に充填して成形される。このとき、シールド電線10に圧着した端子金具20のうち平板部22の先端は、導電フランジ30の端子挿通孔33に挿通した状態にセットされ、その

平板部22の先端側から金型内に溶融樹脂が充填される。これにより、導電フランジ30の端子挿通孔33を介して、ハウジング40のうち絶縁チューブ24とシールド部材25との間に、溶融樹脂が入り込む一方、端子挿通孔33の周りの樹脂流入孔34を介して、ハウジング40のうちシールド部材25の外側に溶融樹脂が流れ込む。そして、ハウジング40は、端子金具20に沿ったL字状に成形され、L字の一辺の途中に導電フランジ30が固定される。

【0029】また、ハウジング40のうち導電フランジ30より平板部22の先端側は、円柱状の嵌合部41をなし、その嵌合部41の先端面から平板部22が直立している。さらに、嵌合部41の外周面には、Oリング溝42が形成され、ここにOリング43が収容されている。

【0030】上記のように構成された本実施形態のシールドコネクタは、例えば、モータの外壁を構成するシールド壁（以下、「相手シールド壁50」という）に取り付けられる。この相手シールド壁50には、図2に示すように、貫通孔51が形成され、その貫通孔51の近傍には、ねじ孔52が形成されている。そして、シールドコネクタは、嵌合部41を貫通孔51に嵌合し、その開口縁に導電フランジ30を押し当て、ボルト挿通孔32に通したボルトBをねじ孔52に螺合することで、相手シールド壁50に固定される。すると、ハウジング40の一端側では、シールド電線10の芯線11に圧着した端子金具20が相手シールド壁50内に突入すると共に、導電フランジ30が、相手シールド壁50に密着して、その導電フランジ30とシールド部材25とを介して、シールド電線10のシールド層13が、相手シールド壁50に導通接続される。そして、ハウジング40の他端側では、シールド電線10が、相手シールド壁50と並行して延びた状態になる。ここで、端子金具20は、圧着部21から延びた平板部22を直角曲げしてL字状に形成されているが、平板部22は、シールド電線10の芯線11と同じ断面積にしたとしても、厚さ方向では、シールド電線10に比べて小さな屈曲半径で屈曲させることができるから、屈曲部分の小型化が図られ、ひいてはシールドコネクタ全体の小型化が図られる。

【0031】このように本実施形態のシールドコネクタによれば、シールド電線10を、相手シールド壁50と並行して延びた状態に取り廻すことができ、しかも、シールドコネクタの小型化を図ることができる。また、ハウジング40を、シールド電線10に係るインサート成形品にしたから、組み付け構造のものに比べて、部品点数の大幅な削減が図られる。さらに、端子金具20を絶縁チューブ24で覆ったから、ハウジング40の成形時の樹脂圧にて、シールド部材25と端子金具20とが接触する心配がない。その上、絶縁チューブ24は、熱収縮性であるから、端子金具20に密着して小スペースに

収まる。

【0032】＜第2実施形態＞本実施形態のシールドコネクタは、図5に示されており、以下、前記実施形態とは異なる構成についてのみ説明し、前記第1実施形態と同じ構成については、同一符号を付して、重複説明は省略する。

【0033】シールド電線10のうちシールド層13の外側には、導通スリーブ60が嵌着されている。導通スリーブ60は、例えば、筒体61の一端から側方に向けてフランジ62を張り出し、そのフランジ62の外縁部を、筒体61の軸方向に並行するように深絞り加工して大径筒部63を形成した構造をなす。そして、筒体61をシールド層13へとかしめてある。

【0034】図5において符号64は、シールド部材であって、金属パイプをL字状に屈曲してなり、その一端には、例えば、軸方向に沿った図示しない切り欠きを複数形成して、複数の短冊部65が設けられ、そのシールド部材64の一端を導電フランジ30の端子挿通孔33に圧入した後、これら短冊部65を外側に曲げ起こしてある。また、シールド部材64のうち導電フランジ30の反対側の開口からは、シールド電線10が端子金具20側から通され、前記した導通スリーブ60の大径筒部63がシールド部材64内に嵌合密着されている。

【0035】このような構成としても、シールドコネクタを相手シールド壁50に取り付けて、シールド電線10を、相手シールド壁50と並行した方向に取り廻すことができ、かつ、部品点数の削減及び小型化を図ることができる。

【0036】＜第3実施形態＞本実施形態のシールドコネクタは、図6に示されており、以下、前記実施形態とは異なる構成についてのみ説明し、前記第1実施形態と同じ構成については、同一符号を付して、重複説明は省略する。

【0037】図6に示すように、シールド電線10のうちシールド層13には、金属リング70が装着されている。また、金属リング70の一端からは、側方に向けて複数の突片71が張り出し形成されると共に、各突片71には、孔71Aが貫通形成されている。そして、金属リング70は、シールド層13に圧着されて互いに安定して導通接続され、次述のハウジング73内に埋設されている。

【0038】本実施形態では、ハウジング73は、導電性の合成樹脂にて構成してある。より具体的には、ハウジング73は、シールド層13を露出させ、それに前記金属リング70を圧着した状態で、シールド電線10を樹脂成形用の金型内にインサートし、その金型内に充填した導電性の合成樹脂にて、端子金具20に対応したL字状に成形されている。また、相手シールド壁50に押し当てられるフランジ74も、ハウジング73に一体成形されている。

【0039】このように本実施形態のシールドコネクタによれば、ハウジング40が、導電性の合成樹脂で構成されて、シールド電線10のシールド層13に密着するから、ハウジング40全体が端子金具20を覆ったシールド部材の役割を兼ね、もって部品点数のより一層の削減と、シールドコネクタの小型化が図られる。しかも、金属リング70は、シールド層13に圧着されて互いに安定して導通接続されると共に、金属リング70から複数の突片71を延設することで、導電性の合成樹脂よりなるハウジング73と広い面積で接触し、互いに安定して導通接続される。これにより、導電性のハウジング73とシールド電線10のシールド層13とが、金属リング70を介して、安定して導通接続される。

【0040】＜第4実施形態＞続いて、本発明の第4実施形態について、図7を参照としつつ説明する。なお、以下では上記した第1実施形態とは異なる構成についてのみ説明し、第1実施形態と同じ構成については、同じ符号を付すと共に重複する説明を省略する。

【0041】端子金具80は、金属板を途中で直角曲げてL字状に形成された板部81の両端に、共にU字状に湾曲して形成された第1圧着部82及び第2圧着部83が設けられている。第1圧着部82には、シールド電線10の芯線11が圧着される一方、第2圧着部83には、芯線96を絶縁被覆97で覆った構成の中継電線95の芯線96が圧着されている。この端子金具80には、両電線10、95を圧着した状態で熱収縮性の絶縁チューブ84が被せられ、この絶縁チューブ84を加熱して収縮させることで、シールド電線10の内部絶縁層12の端部から端子金具80を挟んで中継電線95の絶縁被覆97の端部にわたる領域の全体に絶縁チューブ84が密着される。

【0042】絶縁チューブ84の外側には、編組線を筒状にしたシールド部材85が密着した状態で被せ付けられている。シールド部材85の一端は、シールド電線10のシールド層13に外装した状態で外側からU字状の圧着片26が圧着される。シールド部材85の他端は、導電フランジ86の端子挿通孔90に嵌めた導電スリーブ87に外装した状態で外側からU字状の圧着片27が圧着される。これによりシールド部材85は、シールド層13及び導電スリーブ87に導通接続される。そして、シールド部材85の外側には、例えば銅線からなる固定部材88が巻き付けられることで、シールド部材85は絶縁チューブ84に対して密着状態に固定されている。

【0043】導電フランジ86は、金属板から構成されるとともに、その外形は図1を参照とするように洋梨形状となっている。導電フランジ86には、ボルト挿通孔89と端子挿通孔90とが貫通して形成されるとともに、端子挿通孔90の孔縁を部分的に切欠することで複数の第1樹脂流入孔91が貫通して形成されている。導

電フランジ86には、第1樹脂流入孔91から径方向へ所定寸法外側にずれた位置で、且つ第1樹脂流入孔91とは周方向へ所定角度ずれた位置に複数の第2樹脂流入孔92が貫通して形成されている。

【0044】端子金具80により接続されたシールド電線10及び中継電線95の端末部は、合成樹脂よりなるシールド筒体93にて覆われ、さらにそのシールド筒体93がハウジング94にて覆われている。詳細には、シールド筒体93は、シールド電線10及び中継電線95を一次成形用金型にインサートし、ハウジング94を構成する樹脂より柔らかい絶縁性の合成樹脂（例えば、ウレタン）を熔融状態にして金型内に充填して形成される。このとき、熔融状態の合成樹脂は、導電フランジ86の第1樹脂流入孔91を通して導電フランジ86の前後に行き渡る。この過程で、シールド部材85は固定部材88により絶縁チューブ84に密着状態で固定されているから、金型内に充填される合成樹脂の射出圧によりシールド部材85が変形したり損傷を受けたりする事態が極力防がれる。シールド筒体93は、端子金具80に沿ったし字状に成形され、絶縁チューブ84及びシールド部材85の全体を覆うとともに、シールド電線10の外部被覆14の端部から中継電線95の絶縁被覆97の端部にわたる領域に成形される。このシールド筒体93によりシールド電線10及び中継電線95の周りが液密状に保たれる。一方、ハウジング94は、上記のようにしてシールド筒体93を成形したものを二次成形用金型にインサートし、絶縁性の合成樹脂（例えば、ポリアミド）を熔融状態にして金型内に充填して成形される。このとき、熔融状態の合成樹脂は、導電フランジ86の第2樹脂流入孔92を通して導電フランジ86の前後に行き渡る。そして、ハウジング94は、シールド筒体93に沿ったし字状に成形され、し字の一辺の途中に導電フランジ86が固定される。

【0045】上記のように構成された本実施形態のシールドコネクタは、相手シールド壁50に取り付けられる。取り付けにあたっては、まず、ハウジング94から図示右側へ導出した中継電線95を先端側（第2圧着部83に圧着された端部とは反対側の端部）から貫通孔51に通して相手シールド壁50内に挿入しつつ、ハウジング94の嵌合部41を貫通孔51に嵌合する。貫通孔51の開口縁に導電フランジ86を押し当てつつ、ボルト挿通孔89に通したボルトBをねじ孔52に螺合することで、シールドコネクタが相手シールド壁50に固定される。このとき、相手シールド壁50外では、ハウジング94から導出したシールド電線10が相手シールド壁50と平行に伸びた状態となっている。一方、相手シールド壁50内に挿入された中継電線95は、相手シールド壁50内において自由な向きに取り廻すことができるから、例えばし字状に折り曲げて、相手シールド壁50と平行な向きに延ばすことができる。これにより、中

継電線95の先端側を接続する機器側の接続部位（図示せず）について相手シールド壁50内の自由な位置に配設することができる。もって、相手シールド壁50内の省スペース化を図ることが可能となる。

【0046】＜他の実施形態＞本発明は、実施形態に限定されるものではなく、例えば、以下に説明するような実施形態も本発明の技術的範囲に含まれ、さらに、下記以外にも要旨を逸脱しない範囲内で種々変更して実施することができる。

【0047】（1）前記各実施形態では、ハウジングをシールド電線10に係るインサート成形品としたが、例えば、ハウジングを予め成形しておいて、シールド電線に組み付ける構成としてもよい。より具体的には、し字状に屈曲した筒状のハウジングを、縦割りに2分割した構成としておき、シールド電線にし字状の端子金具を圧着した後で、それらを2分割したハウジングの間に挟むように収容して組み付ける構成としてもよい。

【0048】（2）前記第1実施形態では、編組線よりなるシールド部材25をシールド層13に接続したが、例えば、シールド電線10のシールド層13自体を長く延ばして、シールド部材25に代えた構成としてもよい。

【0049】（3）また、前記第1実施形態において、編組線で構成されたシールド部材25の外側を熱収縮性の絶縁チューブで覆い、これを収縮させることで、その絶縁チューブと、端子金具20外面の絶縁チューブ24との間でシールド部材25を挟んでコンパクトな構成にすることもできる。

【0050】（4）前記各実施形態では、端子金具は、熱収縮性の絶縁チューブ24にて覆われていたが、例えば、熔融状態の絶縁性樹脂を、端子金具の所定の部位に塗布した構成としてもよい。

【0051】（5）上記した第1、2実施形態では、シールド部材と端子金具を包む絶縁チューブとの間に所定の間隔が確保されている場合について示したが、ハウジングを成形する際に、金型内に充填される熔融状態の合成樹脂の樹脂圧によってシールド部材が変形したり損傷を受けたりするおそれがある場合には、上記した第4実施形態と同様に、シールド部材を絶縁チューブに密着状態で取り付けると共に、その外側から銅線などの固定部材によって固定するようにしてもよい。

#### 【図面の簡単な説明】

【図1】 本発明の第1実施形態のシールドコネクタを構成する部品の分解斜視図

【図2】 そのシールドコネクタの側断面図

【図3】 そのシールドコネクタの平面図

【図4】 そのシールドコネクタの正面図

【図5】 第2実施形態のシールドコネクタの側断面図

【図6】 第3実施形態のシールドコネクタの側断面図

【図7】 第4実施形態のシールドコネクタの側断面図

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【図8】 従来のシールドコネクタの側断面図

【図9】 従来のシールドコネクタの分解斜視図

【符号の説明】

10…シールド電線

11…芯線

13…シールド層

20, 80…端子金具

21…圧着部

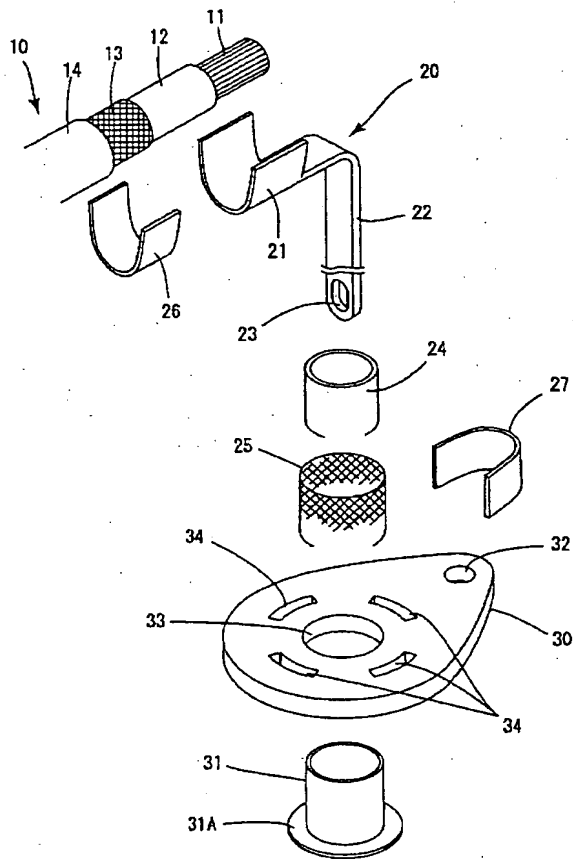
22…平板部

24, 84…絶縁チューブ（絶縁部材）

25, 64, 85…シールド部材

30, 86…導電フランジ

【図1】



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33, 90…端子挿通孔

40, 73, 94…ハウジング

50…相手シールド壁（相手側のシールド壁）

51…貫通孔

70…金属リング

71…突片

81…板部

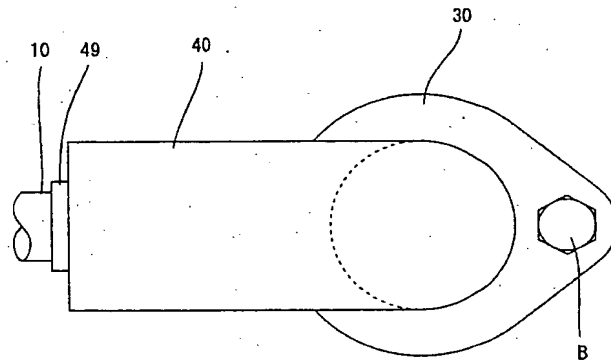
82…第1圧着部

83…第2圧着部

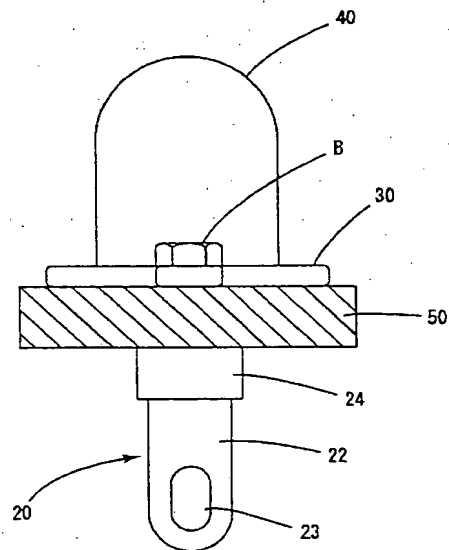
10 88…固定部材

95…中継電線

【図3】

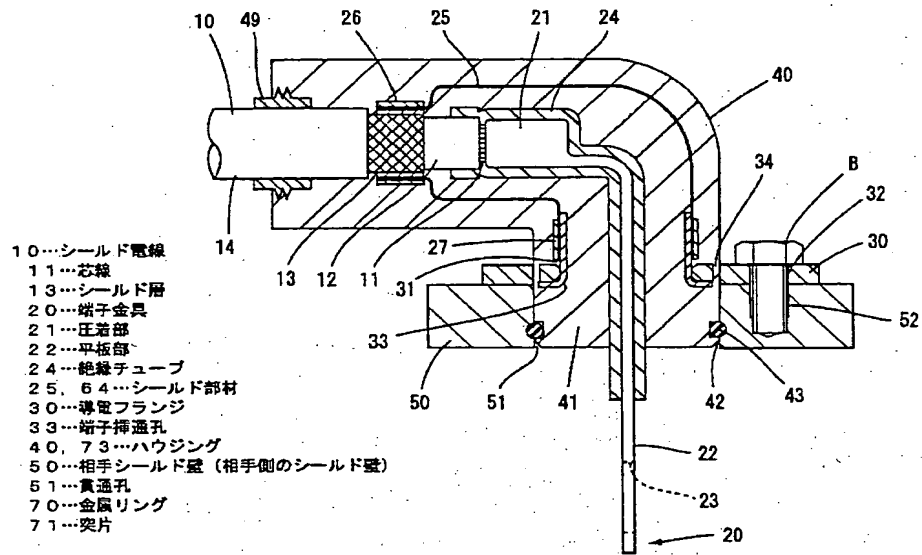


【図4】

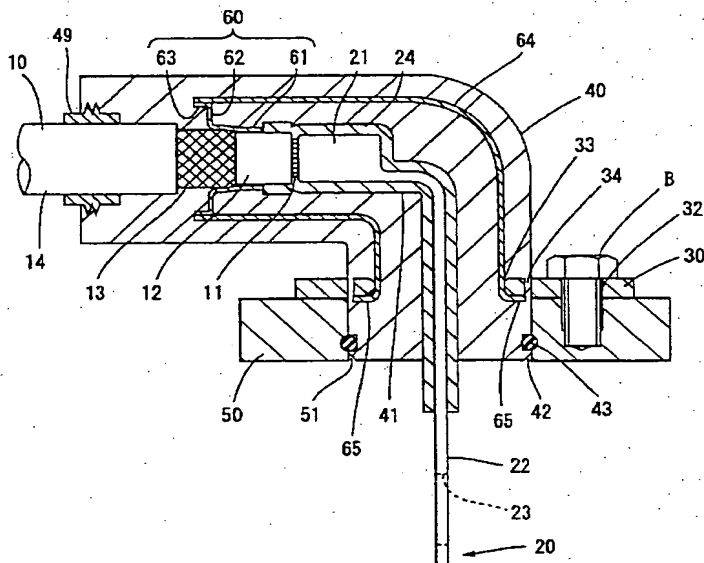




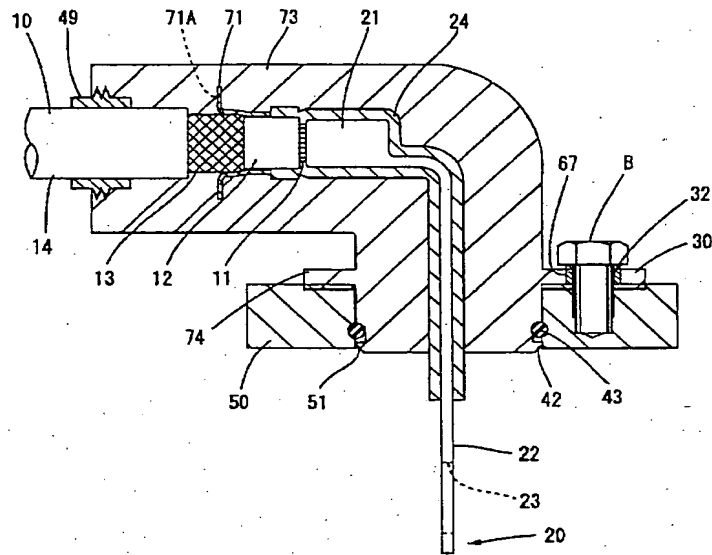
【図2】



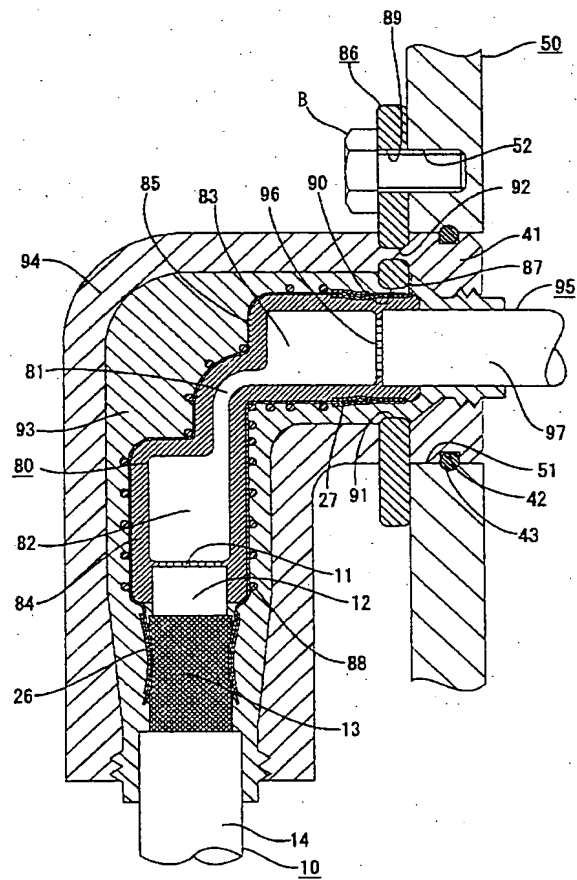
【図5】



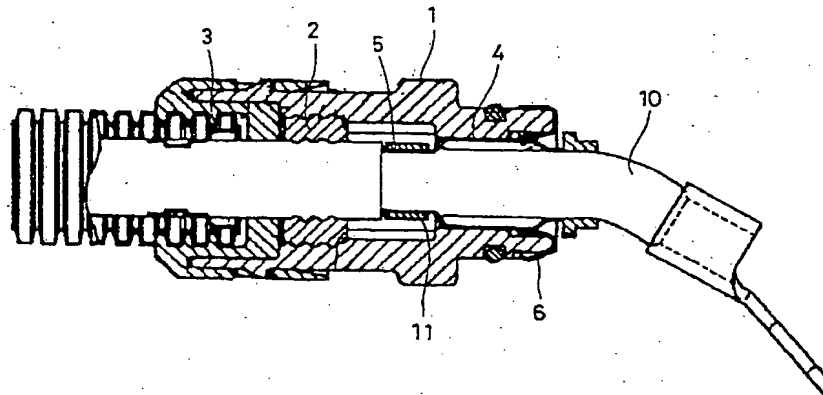
【図6】



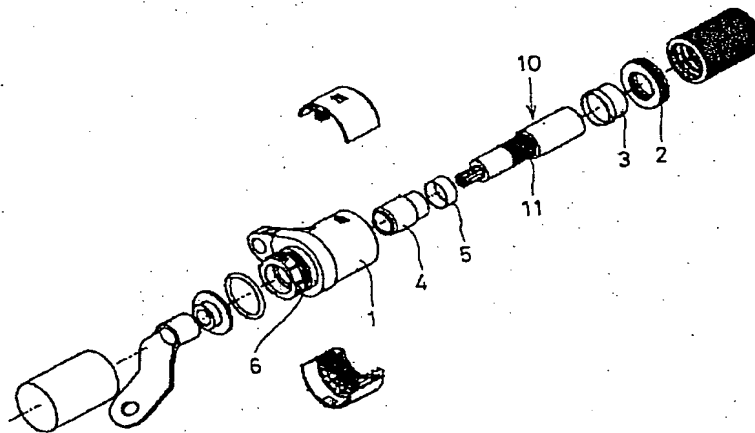
【図7】



【図8】



【図9】



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